



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 7**

11201 Renner Boulevard  
Lenexa, Kansas 66219

October 31, 2014

Mr. Joe Engeln  
Missouri Department of Natural Resources  
P. O. Box 176  
Jefferson City, Missouri 65102

Dear Mr. Engeln:

The U.S. Environmental Protection Agency appreciates the opportunity to comment on the September 16, 2014 Draft Missouri Nutrient Reduction Strategy. The EPA commends the Missouri Department of Natural Resources for leading the effort to fulfill its Mississippi River/Gulf of Mexico Watershed Nutrient Task Force (Hypoxia Task Force) commitment to develop a nutrient reduction strategy.

The EPA applauds MDNR for engaging its many partners in a collaborative effort to tailor a strategy to Missouri watersheds. Region 7 appreciates the opportunity to have Bob Angelo of our staff participate in development of the strategy.

The strategy emphasizes the need for additional water quality (ambient and effluent) monitoring data and the need for additional funding to support monitoring programs. It strongly promotes the voluntary expansion of monitoring activities by the regulated community and by citizen-based monitoring organizations. The Agency welcomes the opportunity to work in partnership with the state to address these issues, and to develop monitoring data sufficient to measure nutrient load reductions from the state.

The EPA eagerly awaits Missouri's resubmittal of lakes criteria in 2015 and criteria for rivers and streams during the next triennial review, presumably in 2018. We are heartened by Missouri's commitment to address nutrient loss reduction as evidenced in its strategy and encourage MDNR to check in regularly with Region 7 personnel to ensure the criteria under development by the state are approvable before promulgating them into rule.

The EPA recognizes there was considerable discussion among stakeholders regarding the need for establishing nutrient reduction goals/targets in priority watersheds. Establishing goals/targets provides stakeholders a clear direction to move toward throughout implementation of the strategy. The EPA recommends the strategy include language on when these targets/goals will be established.

Several subsections in the Appendix contain detailed recommendations and clear timelines for short, mid-term, and long term implementation goals, which will guide stakeholders in taking actions to improve water quality.



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The EPA looks forward to working with MDNR and stakeholders throughout Missouri to develop detailed implementation plans for the nutrient reduction strategy. The attached comments from Region 7 and the EPA Headquarters staff include recommendations for revisions to the strategy.

If you have any questions on these comments, please contact me or Bob Angelo at (913) 551-7060.

Sincerely,



Karen A. Flournoy  
Director  
Water, Wetlands and Pesticides Division

Enclosure

cc: Bob Angelo

## **EPA Comments on Missouri's Draft Nutrient Reduction Strategy Dated September 16, 2014**

### **General Comments**

- Missouri's draft nutrient reduction strategy discusses the eight "framework" elements contained in the March 16, 2011, memorandum from EPA (i.e., the Stoner memo). However, the strategy does not fully address important recommendations contained in the Stoner memo: (1) it does not prioritize watersheds for nutrient reduction on a statewide basis and (2) it does not establish numeric nutrient reduction targets in priority watersheds.
- The strategy emphasizes the need for additional water quality (ambient and effluent) monitoring data and the need for additional funding to support monitoring programs. It strongly promotes the voluntary expansion of monitoring activities by the regulated community and by citizen-based monitoring organizations. The Agency welcomes the opportunity to work in partnership with the state to address these issues, and to develop monitoring data sufficient to measure nutrient load reductions from the state.
- While adaptive management is a good tool for problem solving and decision making, it is unclear how the implementation and strategy progress will be tracked and evaluated. We recommend clearly identified measures be tracked with specific outcomes and development of new/revised approaches if these measures are not.
- The strategy focuses largely on historical or existing programs bearing on the control of nutrient pollution. It emphasizes that upcoming nutrient reduction efforts will build on these programs. However, the strategy does not, in all cases, provide a definitive set of commitments or a clear timetable for moving forward
- As indicated in the strategy, the state anticipates it will adopt numeric nutrient criteria for lakes by 2015 and numeric nutrient criteria for streams by 2018. The report does not present a timetable for developing/adopting numeric nutrient criteria for wetlands. We recommend discussion regarding next steps (data collection, studies, etc.) for development of wetland criteria.
- The Strategy largely does not address drinking water/ground water concerns, and would benefit from additional discussion regarding consideration of this use and associated nutrient concerns.

### **Executive Summary**

- Page 5: This page reads, in part, "[the] strategy does not prioritize watersheds... but follow[s] the prioritization already established as part of the Our Missouri Waters (OMW) approach." This language implies that watershed prioritization already has taken place within the context of OMW. However, the report later notes that said prioritization has not taken place but is planned for the future (pages 12-15). The document should clearly articulate and enumerate the priority watersheds established by the state or a timeframe for this prioritization.



- Page 6 and Policy Basis Page 16-17: The first paragraph concludes with the statement, “Major wastewater treatment plant operators have proposed stricter limits on their discharges....” However, the report’s section on point sources (beginning on page 54) does not propose any definitive limits. Rather, it (1) recommends that a study be performed to identify “feasible nutrient reduction targets,” (2) suggests that the state consider imposing N and P limits on at least some new or expanding wastewater treatment plants, (3) argues that BNR is the nutrient removal technology most commonly applied in other states and (4) notes that the treatment targets associated with BNR usually equal or approach 10 mg/L TN and 1 mg/L TP.

### Introduction

- Page 9: Paragraphs addressing the status of the state’s 2014 303(d) list and 2014 WQS should be updated to reflect recent EPA actions. The EPA responded to the 303(d) list on August 26, 2014. On October 22, 2014, the EPA responded to that portion of the WQS submittal addressing water classification issues in Missouri.
- Page 9 and Page 21: The mileage estimate given for the state’s newly classified streams appears incorrect. This estimate should read approximately 91,000 miles rather than 85,000 miles.

### Strategy Development

- Page 11: The strategy also appears to contradict one of the guiding principles set forth in this section. Specifically, principle 9 reads, in part, “[e]stablish clear, comprehensive, and quantifiable goals and indicators of progress.” The report states that [data] from the USGS, USDA, NRCS and the [MDNR] provide the basis for determining past and present loadings and for framing discussions at the watershed level.” Given the availability of this data, we recommend the strategy set a timeframe to establish quantifiable nutrient reduction goals.

### Policy Basis for Missouri’s Strategy

- Pages 12-13: The strategy acknowledges that some regions of the state are more heavily impacted by nutrient pollution than others, but it argues against the prioritization of abatement actions based on observed regional differences. Instead, the strategy opts for the following approach that builds on the state’s OMW initiative:

*OMW creates the mechanism through which the department’s resources will be strategically applied to address water quality and quantity issues in a comprehensive manner to those issues identified by stakeholders. OMW is based upon 8-digit Hydrologic Unit Code basins, but provides a clear path to focusing on smaller watersheds based on the data and desires of those in the watershed. The OMW process is a five year cycle of assessment, involvement, priority setting and action that supports an orderly approach to nutrient reduction. After five years, the cycle will begin again revisiting and revising the results from the first watersheds identified while continuing progress in all watersheds, providing a mechanism to use adaptive management and build upon early successes.*

- Page 13: As noted in the strategy, OMW “seeks to collect, organize and analyze information to have a better understanding of the priority water resource concerns within each watershed.” The state contains 66 HUC-8 watersheds. The strategy indicates that, by” coordinating the efforts of all the agencies, interest groups, private sector partners, individuals and others who have an interest in [a given] watershed, [it] can focus department staff and financial resources on priorities, and on solving tough water resource problems.” We suggest the strategy describe how the success of these coordinated efforts will be measured and used in future decision making.
- Page 14-16: Initially, the OMW approach will be restricted in application to a few pilot watersheds. The strategy notes (on page 40) that “Missouri has not ranked or prioritized nutrient loss reduction on an 8-digit HUC basis, [but] nutrients were included as one of the criteria in choosing the order in which the watersheds would be served within the [OMW] process.” The strategy provides no timeline for the application of the OMW approach to all 66 HUC-8 watersheds.
- Page 20: In a paragraph addressing the state’s disapproved numeric nutrient criteria for lakes, the strategy asserts that:

*At the department’s request, MDC staff provided documented recommendations for limits for the response variables that would be more consistent with the goal of healthy fisheries. These goals were higher than those to which EPA had agreed. EPA maintains that endemic aquatic life is the most sensitive use of the water bodies in question, and that the lower limits are necessary to protect this use.*

However, no limits (goals) for the response variables were agreed to by the EPA, rather these limits were higher than the multiple lines of evidence discussed in the previous paragraph.

EPA does not take the position that endemic aquatic life use is in all cases the most sensitive use. Rather, EPA indicates that, “protection of aquatic organisms and their uses should be defined as prevention of unacceptable long-term short-term effects on (1) commercially, recreationally, and other important species and (2) (a) fish and benthic invertebrate assemblages in rivers and streams, and (b) fish, benthic invertebrate, and zooplankton assemblages in lakes, reservoirs, estuaries, and oceans.” (Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses, 1985).

- Page 21: The strategy proposes to develop numeric nutrient criteria for “all lakes larger than 10 acres [located] outside the large river floodplains.” However, many classified lakes in Missouri, including the state’s nearly 2,300 newly classified lakes, are smaller than ten acres and some are located within the floodplains of large rivers. The state should discuss how these lakes will be covered by the application of numeric nutrient criteria.
- Page 21: The strategy asserts that most of state’s L3 lakes are “primarily managed by [the Missouri Department of Conservation].” Some quantification would be useful as it appear that that the vast majority of these lakes are located on private property.

## Large Scale Trends

- Pages 35-39: Many readers may be unfamiliar with the location of the monitoring sites referenced in Figure 4. We suggest expanding the language in the caption or inserting a small map in the figure.

### Adaptive Management – 5 Year Approach

- Page 40: One of the paragraphs on this page reads, in part, “[w]hile Missouri has not ranked or prioritized nutrient loss reduction on an 8-digit HUC basis, nutrients were included as one of the criteria in choosing the order in which the watersheds would be served within the [OMW] process.” This is a key point and probably should be made earlier in the report, perhaps as part of the Stoner memo discussion.

### Actions

- Page 43-53. The first subsection addresses agriculture. It identifies a number of potential best management practices (BMPs) for the management of animal manure, the abatement of sheet, rill and gully erosion, the treatment of runoff at edge of field, the use of cover crops, the application of commercial fertilizers, and the minimization of nutrient runoff from pastures. It is unclear how these practices, their implementation, and overall effectiveness will be tracked and evaluated over time, and more importantly what impact they will have on water quality. How will the practices be prioritized and will there be additional outreach efforts in priority watersheds, including practices on vulnerable lands within priority watersheds?
- How will the management strategies, such as those listed in Table 2 (Page 45), be implemented y throughout Missouri? Are these going to be incorporated into a guidance document, through nutrient management plans, or as an outreach strategy?
- Page 53: In the subsection dealing with municipal and industrial wastewater, it is asserted that “[modeling] results consistently show developed land area and point sources to be relatively small contributors to nitrogen and phosphorous loads in the Mississippi-Atchafalaya River Basin (MARB)...” This assertion seemingly does not comport with the following excerpt from pages 36-37 of the strategy:

*Robertson and Saad (2013) used the newer version of SPARROW to predict that about one-half the phosphorus loading and 60% of the nitrogen loading in the MARB is derived from agricultural non-point sources. Their analysis ascribes roughly 14% of the nitrogen loading and 29% of the phosphorus loading to WWTP's and urban areas. In contrast, earlier studies predicted that agriculture accounted for 65-80% of the nitrogen and 48-80% of the phosphorus flux while urban sources and WWTP's were responsible for 7-13% of the nitrogen and 10-28% of the phosphorus flux. After compensating for the effect of stream size and the assimilation/storage of nutrients in smaller rivers, Roberson and Saad (2013) concluded that the highest nitrogen and phosphorus yields in terms of delivery to the Gulf were from watersheds dominated by wastewater treatment plants.*

- Page 55: The strategy recommends that, over the next three years, nutrient monitoring be performed at all POTWs “that have a design capacity to discharge greater than 1 MGD.” However, the strategy also states that samples for nutrients “should be taken monthly ( $\geq 1$  MGD) or quarterly ( $< 1$  MGD and  $> 100,000$  gpd). Please explain.
- Page 57. We understand the emphasis on both cost and overall environmental impact. Please ensure that these flexibilities remain consistent with 122.44(d)(1)(vii).
- Page 60: The strategy states that “[a]n additional consideration that should be evaluated is imposing TN/TP requirements immediately upon new dischargers as well as imposing nutrient permit targets on those existing facilities (with compliance schedules) that need to increase plant capacity.” Is this a firm recommendation and commitment on the part of the point source community that will be implemented?
- Page 60: The strategy asserts that not every state plan includes permit limits for nutrients. It uses Kansas as an example, indicating that this state establishes technology-based nutrient goals within NPDES permits for some facilities. Kansas also has developed several hundred TMDLs for nitrogen and phosphorus, already included WQBELs for these nutrients in several permits, and plans to markedly increase the number of permits with nutrient limits in the upcoming year.
- Page 60: The strategy asserts that “[s]everal states allow permit writers to deviate from the limits based on technological and feasibility considerations, and Ohio specifically gives permit writers flexibility to design compliance timelines that allow agencies to manage costs.” However, all states must certify that their permits comply with applicable WQS. WQBELs established pursuant to adopted/approved WQS are not trumped in any way by technology- or feasibility-based considerations, although such considerations may be factored into the development of compliance schedules or variances. Missouri’s WQS allow for compliance schedules and specifically reference 40 CFR 122.47. The latter rule reads, in part, “[a]ny schedules of compliance under this section shall require compliance as soon as possible....”
- Pages 53-62: Despite the above comments, the municipal/industrial subsection presents background information, suggestions for enhancing monitoring activities, and suggestions for reducing nutrient loadings from municipal and industrial point sources. A general timeline is provided for the performance of enhanced monitoring (years 1-3), the performance of a study to identify feasible nutrient reduction technologies (years 1-3), the establishment of nutrient reduction approaches and targets (years 3-5+) and other related actions (years 1-5).
- Page 62: This subsection addresses urban stormwater nutrient reduction, primarily by focusing on municipal separate storm sewer systems (MS4s). It does not consider CSOs, indicating that these fall under the category of POTWs. Please clarify why CSOs are not addressed in the strategy, given that CSOs contribute to nutrient loadings in some of the state’s large urban areas.
- Page 63: The strategy indicates that “there is no clear evidence to suggest total nitrogen or phosphorous levels increase in big rivers as the water flows through the Metropolitan St. Louis area.” However, the available database for “big river” nutrient concentrations is not well suited to evaluations of this kind, because it reflects whole-river rather than near-shore water quality

conditions. Stormwater runoff, even when routed through storm drains and CSOs, does not mix readily or rapidly within receiving streams. Rather, long bank-hugging plumes are the norm, especially in larger streams. Additional monitoring-including near shore-may prove useful in accurately characterizing the actual impacts of urban loads.

- Page 63: The strategy also contends that “[the] data suggest the metropolitan St. Louis area does not make a significant contribution to total phosphorous or nitrogen levels, relative to other sources in the upper Mississippi and Missouri River watersheds” (emphasis added). This sentence should acknowledge that, based on the available data, upstream sources appear to have a greater impact than local sources on water quality conditions in large rivers. The available data does not lend itself well to the identification of locally derived water quality impacts, because it does not reflect near-shore water quality conditions.
- Page 63: “It seems reasonable that, given the relative size and population of other urban areas in Missouri, that the nutrient contribution of other urban areas in Missouri may likewise be relatively minor.” Small urban streams are often greatly impacted by overland runoff and discharges from storm sewers and CSOs. Additional monitoring may prove useful in accurately characterizing the actual impacts of urban loads.
- Page 63: The last paragraph on this page reads as follows:

*Because of the likely minor overall contributions of nutrients to State waters from MS4 systems, it is important that this strategy take an iterative, efficient, and cost-effective approach toward addressing MS4 contributions. We anticipate that urban MS4 nutrient loadings will be less than 10 percent of the overall loadings.*

How was the ten percent figure derived? Is it meant to apply to the state as a whole? Does the actual nutrient contribution from MS4s vary from watershed to watershed?

- Page 67: One of the paragraphs on this page acknowledges the need for comprehensive monitoring :

*Any nutrient reduction measures for the urban stormwater sector should be in line with its limited contribution to total nutrient loadings. Although urban stormwater discharges account for a small percentage of total point source nutrient discharges, the total has not been quantified with comprehensive monitoring data. A more comprehensive monitoring program for municipal point source stormwater discharges would provide valuable data to verify the preliminary assumption that these sources account for a relatively minor portion of total nutrient loadings.*

- Pages 62-69: Similar to the previous subsection, this subsection provides background information and suggestions for reducing nutrient loadings from urban stormwater systems. These suggestions include, for example, enhancing public involvement and education programs, implementing additional structural and non-structural BMPs, expanding program compliance and monitoring measures, and expanding water quality monitoring activities. A timeline is provided



for the implementation of enhanced monitoring (years 1-3), the study of available nutrient reduction technologies (years 1-3), the development and implementation of recommended practices (years 4-5) and other related actions (years 5+).

- Pages 69-73: This subsection addresses decentralized (onsite and cluster) wastewater treatment systems. It presents detailed recommendations focusing on (1) an inventory of decentralized wastewater treatment systems, (2) improved system operation and maintenance, (3) inspections and monitoring, (4) needed corrective actions, (5) public education and (6) financial assistance. The subsection also establishes a clear timeline, in the form of several definitive short-term (five-year), mid-term (ten year) and long-term (15-year) goals.
- Pages 73-77: Here, the strategy considers other possible actions for reducing nutrient loadings in Missouri. These include (1) a system for trading nutrient reduction credits among point sources or among point and nonpoint sources and (2) the increased provision of technical and financial assistance to smaller communities. This subsection is forward looking and realistic in its expectations. For example, the discussion addressing trading acknowledges that “[a]ny schema will ... have to address failed trades, *force majeure* and other circumstances.” The discussion addressing small communities acknowledges that “[t]hough individual smaller communities are not likely to be significant contributors to hypoxia in the Gulf of Mexico, they can impact smaller, local water bodies and, when combined with hundreds of other WWTP’s, can have a measurable effect on nutrient loading.” This subsection provides background information and clear recommendations pertaining to lawn fertilizer use, pet waste disposal, home downspout diversions and urban stream buffers.
- Pages 77-78: Although this section is titled Expected Water Quality Improvements, it provides no quantitative estimate or general indication of the nutrient loading reductions likely to result from the implementation of the strategy. The following explanation is given in the report:

*Because of significant challenges in assessing likely impacts of all of the proposed actions on water quality, we have created a hierarchy of measures. This approach was selected over an approach that would have produced expected reductions in nitrogen and phosphorus for each activity and in total because of the large uncertainties in many of the critical measurements, uncertainties in the effectiveness of the proposed actions, the unpredictability of large scale trends in agriculture and water treatment approaches, and the desire to produce a strategy that was credible in its actions, the implementation of those actions and its expected water quality benefits.*

Immediately following this paragraph, the strategy discusses recently implemented initiatives and proposed measures for obtaining (1) additional monitoring data and (2) information on the likely impacts of agricultural BMPs on ambient nutrient concentrations. It is unclear how the success or failure of the strategy will be evaluated in quantitative terms in the future.

- Page 78: This section addresses, in very general terms, the impending implementation of the strategy. However, it does not set forth definitive schedules or milestones. This section may provide an appropriate location in the report for summarizing implementation schedules, for referencing Appendix C, and for referencing the Gantt chart posted on the MDNR website.

- Page 79-81: This section addresses challenges facing the implementation of the strategy. Among these is the need for better ambient monitoring data. The strategy concludes that:

*Increased knowledge of point source discharges through monitoring is a necessary component of effective targeting. However, efficient and effective targeting is always a challenge when much of the nutrient load is coming from areas that are not now and are not expected to be regulated in the future. Missouri does need to develop a better understanding of water quality in order to target actions most effectively; however, working with groups and individuals ready to take action cannot be delayed by a continued wait for better data or modeling.*

EPA agrees that nutrient reduction efforts in Missouri should be implemented as soon as possible.

- Pages 81-82: This section addresses, in very general terms, the state's longer-term nutrient reduction goals. It begins by repeating the vision statement given at the outset of the strategy, then indicates that the strategy's "ultimate goals are to use nutrients wisely and reduce nutrient loss to our rivers, streams and lakes, improve local water quality by reducing excess nutrients in these systems, both environmentally and economically, in Missouri and downstream." We recommend this general statement also appear somewhere in the introductory paragraph of the report. Overall, this section provides a fitting conclusion to the report.

## Appendix

- Appendix p. 1. This section would benefit from an explanation of whether or not Missouri is a manure surplus or manure deficit state (or neutral). We would suggest making a clear statement that nutrients can be lost from both production areas and during/after land application. This has a large bearing on what manure management systems make sense. In the "define the action" section, the idea of eliminating discharges is raised. This section of the appendix could be improved if some statements are made about how manure can be lost from the production area, as well as listing of some BMPs that can address those concerns.
- Appendix p. 9. These are all voluntary activities, and are likely to be appropriate on non-permitted facilities, such as small AFOs, or crop producers who receive manure from AFOs/CAFOs. We would suggest adding one bullet that states clearly that if animal production facilities are in violation of the CWA, action may be taken by MDNR or EPA to address the issue.
- Appendix, p. 63. In the 8 goals listed, nowhere is "implement controls sufficiently stringent to protect water quality" or any similar goal listed. The only mention of controls is in goal #2, which is actually saying that if any control is put in place, it will be subject to a cost test, which, as above, should at the same time remain consistent with 122.44(d)(1)(vii)